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| 10/665,779 | 09/19/2003 | Daniel J. Scales | A032 | 6408 |

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| EXAMINER | |
|---|---|
| CHANKONG, DOHM | |
| ART UNIT | PAPER NUMBER |
| 2452 | |

| NOTIFICATION DATE | DELIVERY MODE |
|---|---|
| 11/17/2009 | ELECTRONIC |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ipadmin@vmware.com

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/665,779 | SCALES ET AL. | |
| | Examiner | Art Unit | |
| | DOHM CHANKONG | 2452 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *16 September 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-7,32-43 and 49-58* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1, 32-34, 37, and 39* is/are rejected.

7)☒ Claim(s) *2-7,35,36,38,40-43 and 49-58* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

This non final rejection is in response to Applicant's arguments which were filed on 9/15/2009. Claims 37-43 and 54-58 are amended. Claims 8-31 and 44-48 were previously cancelled. Accordingly, claims 1-7, 32-43, and 49-58 are presented for further examination.

### *Response to Arguments*

Applicant's arguments with respect to claims 1-7, 32-40, and 42-58 have been considered but are moot in view of the new ground(s) of rejection. Because this new ground of rejection was not necessitated by Applicant's amendment, this action is a non-final rejection.

### *Allowable Subject Matter*

Claims 2-7, 35, 36, 38, 40-43, 49-58 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

**I. CLAIMS 1, 37, AND 39 ARE REJECTED UNDER 35 U.S.C §103(A) AS BEING UNPATENTABLE OVER *SAITO*, U.S PATENT NO. 5.257.386, IN VIEW OF *FLYNN*, JR., U.S. PATENT NO. 6.453.392 ["*FLYNN*"].**

The examiner previously cited *Flynn* in the PTO-892 filed on 8/24/2007. All citations in the following mapping are to *Saito* unless otherwise noted.

**Claims 1 and 37**

As to claim 1, *Saito* discloses a method for responding to a request to transfer data between a first virtual machine (VM) in a computer system and a virtual storage device backed up by a data storage unit within a multipath data storage system, the method comprising:

identifying the request issued by the first VM, the request being a virtual data transfer request, the first VM being one of a plurality of VMs [Fig. 2: disclosing a request containing a virtual start address for main and external storage];

identifying a plurality of paths over which the data could be routed from the computer system to the data storage system and multipath routing information related to a state of each of the possible paths [column 3 «lines 46-63» | column 6 «lines 36-42» : determining whether paths are available]; and

determining VM-specific information related to the first VM [column 3 «lines 51-56» : each VM has a transfer priority | *Flynn*, column 8 «line 54» to column 9 «line 24»: VM's request includes VM-specific information such as VMID and the path group ID (PGID) | column 4 «lines 22-28»: where the PGID specifies a set of paths associated with the particular VM];

selecting one path of the plurality of paths according to an algorithm, which takes as inputs at least contents of the multipath routing information [column 6 «lines 36-42» : selecting a path based on availability]; and

routing a physical data transfer request corresponding to the virtual data transfer request to the data storage system over the one path that was selected [column 5 «lines 5-39»]

As indicated in the above mapping, *Saito* does not expressly disclose using the contents of the VM-specific information as part of the algorithm for selecting a path. However, such a feature was well known in the art at the time of Applicant's invention as evidenced by *Flynn*. Like *Saito*, *Flynn* discloses utilizing virtual machines within a storage system [column 5 «lines 15-22»]. *Flynn* further discloses a VM's request including VM-specific information such as VMID and the path group ID (PGID) where the PGID specifies a set of paths associated with the particular VM.

*Flynn*'s PGID is a basis for path selection because it specifies a particular grouping of paths which are associated with the particular virtual machine. The path used by the VM can only come from this group of paths. The PGID is used to help select a particular path for the VM. Thus, *Flynn*'s VMID and PGID read on Applicant's claimed VM-specific information.

It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to have modified *Saito*'s system to include *Flynn*'s teachings. The ability to select paths based on VM-specific information as taught by *Flynn* would improve a traditional system such as the one taught by *Saito* by "preserving data integrity" and optimizing the performance of the storage system [*Flynn*, column 5 «lines 20-22»].

As to claim 37, it is rejected for at least the same reasons set forth for claim 1.

**Claim 39**

*Saito* as modified by *Flynn* discloses not routing the data to the data storage unit [column 6 «lines 23-33»].

**II. CLAIMS 32-34 ARE REJECTED UNDER 35 U.S.C §103(A) AS BEING UNPATENTABLE OVER *SAITO* AND *FLYNN*, IN FURTHER VIEW OF VAN *RIETSCHOTE*, U.S PATENT NO. 7.213.246 ["*RIETSCHOTE*"].**

**Claim 32**

*Saito* as modified by *Flynn* discloses all the limitations as claimed [see rejection of claim 1] except for determining that a failure has occurred that prevents the transfer of data over a first path of the plurality of possible paths nor does he disclose in response to this determination, suspending the first VM. However, the feature of determining whether failures have occurred that prevents data from being communicated and suspending a VM in response to this determination was well known in the art at the time of Applicant's invention.

For example, *Rietschote* discloses these feature in his invention directed towards failing over a virtual machine. Specifically, *Rietschote* discloses determining when an application has failed in a cluster of computer systems [column 4 «lines 9-10»] and in response to this determination, suspending the virtual machine [column 4 «lines 10-12»]. *Rietschote* further discloses that an applications may include well known applications such as email servers, web servers, database servers [column 1 «liens 15-17»]. Clearly, since these applications are well known to be involved in the transfer of data over a connection path, when these types of applications fail, transfer of data from these applications over the network is prevented. In addition, *Rietschote* discloses an application operating on an alternate path [Figure 1 «items 10B, 10N» where : each computer system represents an alternate path to the network 12 | column 2 «lines 52-53»].

Therefore, *Rietschote* discloses the missing limitations of determining that a failure has occurred that prevents the transfer of data over a first path of the plurality of paths and

subsequently suspending the VM in response to determining that a failure has occurred [column 2 «lines 52-53» | column 4 «lines 9-12»]. It would have been obvious to one of ordinary skill in the art to have modified *Saito*'s system to include *Rietschote*'s suspension functionality. One would have been motivated to modify *Saito* in order to increase the fault tolerance capabilities of his system.

**Claim 33**

*Saito* as modified by *Flynn* does not expressly disclose that in response to the determination that the failure has occurred that prevents the transfer of data over the first path, failing over to one or more alternate paths. However, failing over to an alternate path when a first path fails was a well known feature in the art at the time of Applicant's invention. *Rietschote* discloses this functionality through his teaching of failing over a VM from one computer system to a second computer system that has an alternate connection to the network [Figure 2 | column 4 «lines 14-21» | column 6 «lines 20-30»]. It would have been obvious to one of ordinary skill in the art to have modified *Saito*'s system to include the failover capability taught in *Rietschote*. One would have been motivated to modify *Saito* because such capability enables VMs to continue communicating with the storage device even when the communication through the first connection is impossible.

**Claim 34**

*Saito* discloses not routing the data to the data storage unit [column 6 «lines 23-33»].

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DOHM CHANKONG whose telephone number is (571)272-3942. The examiner can normally be reached on Monday to Friday [10 am - 6 pm].

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thu Nguyen can be reached on (571)272-6967. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DOHM CHANKONG/
Primary Examiner, Art Unit 2452